



Rec'd PCT/PTO

GB 03/840 #2

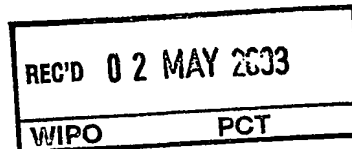
01 SEP 2004



INVESTOR IN PEOPLE

## PRIORITY DOCUMENT

SUBMITTED OR TRANSMITTED IN  
COMPLIANCE WITH RULE 17.1(a) OR (b)



The Patent Office  
Concept House  
Cardiff Road  
Newport  
South Wales  
NP10 8QQ

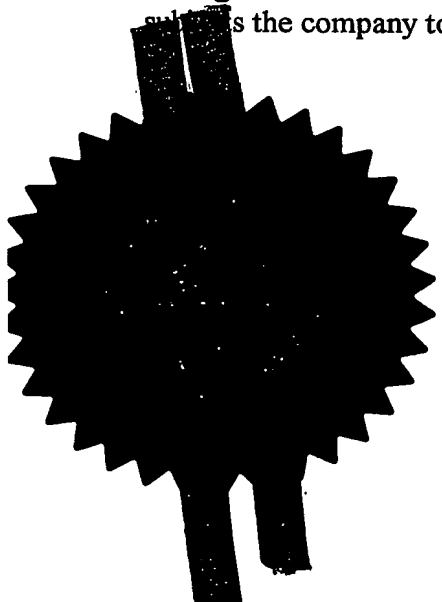
I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

I also certify that by virtue of an assignment registered under the Patents Act 1977, the application is now proceeding in the name as substituted.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

In accordance with the rules, the words "public limited company" may be replaced by p.l.c., plc, P.L.C. or PLC.

Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.



*R. Mahoney*

Signed

Dated 25 March 2003

**BEST AVAILABLE COPY**



INVESTOR IN PEOPLE

GB0204803.1

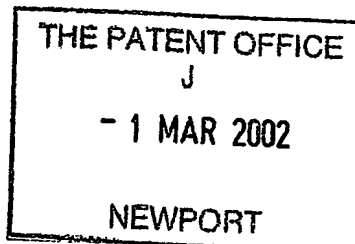
By virtue of a direction given under Section 30 of the Patents Act 1977, the application is proceeding in the name of

INOVAIR LIMITED  
Incorporated in the United Kingdom  
58 Michelham Gardens  
Strawberry Hill  
London  
TW1 4SB  
United Kingdom

[ADP No. 08387193001]

# Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)



The Patent Office  
Cardiff Road  
Newport  
South Wales  
NP9 1RH

1. Your reference  
SPG/P36726
2. Patent application number  
(The Patent Office will fill in this part)  
0204803.1
3. Full name, address and postcode of the  
each applicant (underline all surnames)  
Huib Maat  
11 Michelham Gardens  
Strawberry Hill  
London  
TW1 4SB  
United Kingdom  
Patents ADP number (if you know it)  
8335366001  
If the applicant is a corporate body, give the country/state of its incorporation  
SECTION 30 (1977 ACT) APPLICATION FILED 07.05.02
4. Title of the invention  
Frangrance Wax and Candle Composition
5. Name of your agent (if you have one)  
Harrison Goddard Foote  
"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)  
31 St Saviourgate  
YORK  
YO1 8NQ  
Patents ADP number (if you know it)  
7914237002
6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number  
Country Priority application number (if you know it) Date of filing (day / month / year)
7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application  
Number of earlier application Date of filing (day / month / year)
8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:  
a) any applicant named in part 3 is not an inventor, or  
b) there is an inventor who is not named as an applicant, or  
c) any named applicant is a corporate body.  
See note (d))

# Patents Form 1/77

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form

Description 9

Claim(s) 4

Abstract

Drawing(s) 1

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11.

I/We request the grant of a patent on the basis of this application.

Signature

S.P. Gilholm

Date

February 2002

12. Name and daytime telephone number of person to contact in the United Kingdom

S P Gilholm

01904 732120

## Warning

After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

## Notes

- If you need help to fill in this form or you have any questions, please contact the Patent Office on 0645 500505.
- Write your answers in capital letters using black ink or you may type them.
- If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.
- If you have answered 'Yes' Patents Form 7/77 will need to be filed.
- Once you have filled in the form you must remember to sign and date it.
- For details of the fee and ways to pay please contact the Patent Office.

## FRAGRANCE WAX AND CANDLE COMPOSITION

### Background of the Invention

This invention generally relates to the dispensing of fragrance from an air freshener  
5 candle product. More specifically this invention relates to a free-standing fragrance  
candle comprising an outer fragranced shell, an inner core and wick.

A typical candle is formed of a solid, or semi-solid, body of wax such as paraffin wax  
or beeswax that contains an axially embedded combustible wick. When the wick of  
10 the candle is lit the heat that is generated melts the solid wax. The resulting liquid  
wax rises up the wick through capillary action and is combusted. More recently  
transparent and translucent candles have been developed in which the body of the  
candle comprises a solvent blended with a polymeric material to form a gel. For  
example United States Patent number 6,111,055 describes a gel candle composition  
15 comprising an ester-terminated dimer acid-based polyamide blended with a solvent.  
In this case the heat generated when the wick is lit is sufficient to melt the gel  
composition, and the resulting liquid is transported to the top of the wick by capillary  
action and is combusted.

20 Depending on the composition, the candle may be formed into a free-standing pillar,  
or may be better suited to being placed in a container.

Candles have also been developed that incorporate a perfume base in the wax or gel  
body. As the wax is melted in a lighted candle, there is a release of fragrance from  
25 the molten wax pool. Furthermore, the incorporated fragrance can slowly evaporate  
from the surface of the solid wax body of an unlit candle, thereby providing a low  
level of fragrance to the surrounding atmosphere.

Conventional fragrance candles have drawbacks because of cost and other  
30 considerations. Much of the fragrance incorporated into a conventional fragrance  
candle is drawn up the wick and combusted during candle burning, leaving only a

relatively small amount of fragrance to evaporate from the molten wax pool and to freshen the surrounding atmosphere. Further, the migration of incorporated fragrance through the solid wax body of an unlit candle is relatively slow and the level of fragrance released is lower than desired. Increasing the amount of fragrance incorporated into the candle to a level sufficient to freshen the surrounding atmosphere makes the candle tacky or oily and deprives the candle of sufficient structural properties to enable it to resist damage and stand freely. Conventional fragrance candles are generally therefore protected and supported by a rigid, non-flammable container, typically made of for example glass or ceramic.

10

US Patent No. 4,568,270 describes a fragranced free standing candle which comprises an inner fragranced core comprising from 5 to 12% by weight of fragrance oil and an outer shell comprising a high melting paraffin/wax mixture. The outer core may also be fragranced and the examples, e.g. examples 16 to 30 suggest that the amount of fragrance oil in the outer shell may be from 5 to 12% by weight. However, such candles still suffer from the disadvantage that approximately 50% by weight of the fragrance oil is still present in the inner core and this may be lost by, e.g. combustion.

15

Furthermore, attempts to incorporate a high fragrance loading into a wax candle may have a deleterious effect on the burn performance of the candle.

20

There is therefore continuing interest in the development of improved fragrance and other types of air freshener candle products which overcome or mitigate the disadvantages of prior art candles.

25

### **Description of the Invention**

It is an object of this invention to remedy the problems of conventional fragrance candles outlined above. In particular an object of the invention is to provide a free-standing wax air freshener and/or a free standing air freshener candle product which

30

releases a suitable level of fragrance into the atmosphere when unlit, and that will release an increased level of fragrance to the atmosphere when lit.

5 It is another object of this invention to provide an air freshener candle comprising a wax-like composition which has a surprisingly high content of fragrance.

Other objects and advantages of the present invention shall become apparent from the accompanying descriptions and drawings.

10 According to a first aspect of the invention we provide a wax air freshener comprising a wax with a fragrance content of greater than 15% by weight.

15 In a preferred aspect of the invention the wax air freshener may be in the form of a candle. Thus, according to a further aspect of the invention we provide a free-standing fragranced candle comprising a wax incorporating a perfume base and a wick characterised in that the fragrance content of the wax is greater than 15% by weight.

20 In a further embodiment the candle of the invention may comprise an outer shell and an inner core. Thus, for example the candle may comprise an outer shell with a fragrance content of greater than 15%. The inner core may comprise a fragrance content the same as or preferentially lower than that of the outer shell.

25 In accordance with this aspect of the invention we provide a free-standing fragranced candle comprising an outer shell incorporating a perfume base, an inner core and a wick characterised in that the fragrance content of the outer shell is greater than 15% by weight.

30 In a preferred embodiment of the invention the candle as hereinbefore described comprises an outer shell wherein the perfume base content of the outer shell is from 15 to 70% by weight.

In a further preferred embodiment of the invention the candle may comprise an outer shell having a higher melting point than the inner core.

- 5 The inner core is formed of a solid body of wax, such as paraffin wax or beeswax. Optionally the inner core may contain up to 10 weight percent of a perfume base. The inner core may be coated with between about 0.2-4.0mm of a fragranced outer shell.
- 10 Preferably, the fragranced outer shell may contain between about 30-70 weight percent of a perfume base and a carrier therefor, and is not tacky or oily at ambient temperature more preferably 40 to 60% by weight.

15 The unusually high concentration of perfume base in the outer shell is sufficient to ensure a suitable release of fragrance to the surrounding atmosphere when the candle is unlit. Further, concentrating the perfume base in the thin outer shell facilitates migration to the surface of the candle body. When the wick of the candle is lit the heat generated is sufficient to melt the inner core, forming a molten pool within the shell. If perfume base is incorporated in to the inner core then some will evaporate

20 from the molten pool to freshen the surrounding atmosphere, though much will be drawn up the wick and combusted as previously described. The perfume base incorporated in the outer shell is distant from the wick and is therefore less likely to be combusted. The heat generated by the flame and heat transfer from the molten pool is sufficient to warm the outer shell and enhance evaporation of perfume base

25 therefrom, thereby providing a significant release of fragrance to the surrounding atmosphere.

Candles of this aspect of the invention, comprising an inner core and an outer fragranced shell are especially advantageous in that, *inter alia*, they provide a candle

30 which possess a significantly improved burn performance.



The shell is preferably formed from a mixture comprising (a) between about 30-70 weight percent of a perfume base, (b) between about 20-70 weight percent of a linear alpha olefin and (c) optionally up to 50 weight percent of a suitable solvent. More preferably the shell comprises between about 40-60 weight percent of a linear alpha olefin and between about 40-60 weight percent of a perfume base.

According to a yet further aspect of the invention we provide a candle lantern comprising a candle as hereinbefore described.

### Brief Description of the Drawings

A better understanding of the objects, features and advantages of the present invention can be gained from the following detailed description of the preferred embodiments in conjunction with the appended drawings, wherein:

FIG. 1 is a plan view of an embodiment of a fragranced candle according to the invention;

FIG. 2 is a cross-sectional view taken along the line 1-1 of FIG. 1;

FIG. 3 is a plan view of a further embodiment of a fragranced candle according to the invention;

FIG. 4 is a cross-sectional view taken along the line 2-2 of FIG. 3;

### Preferred Embodiments of the Invention

FIGS. 1 and 2 show a free-standing fragrance candle 10 according to the invention.

The candle 10 comprises a wick 11, an inner core 12, and an outer shell 13.

The core 12 can be produced by employing conventional candle making methods such as moulding, dipping, compressing, extruding and the like. The core 12 is formed of a material selected from the group consisting essentially of paraffin, paraffin wax, beeswax, montan wax, carnauba wax, microcrystalline wax, fatty

alcohols, fatty acids, fatty esters, natural and synthetic resins, and mixtures thereof. Optionally, but not necessarily, the core 12 can also contain perfume base.

5 The shell 13 is preferably formed from a mixture comprising (a) between about 30-70 weight percent of a perfume base, (b) between about 20-70 weight percent of a linear alpha olefin and (c) optionally up to 50 weight percent of a suitable solvent. More preferably the shell 13 comprises between about 40-60 weight percent of a linear alpha olefin and between about 40-60 weight percent of a perfume base.

10 Among the different qualities of linear alpha olefins available, particularly good results have been obtained by using LAO C30+ (origin: Aiglon S.A.).

15 As a perfume base there is used in the shell 13, and optionally in the core 12, any of the compositions currently used in perfumery. These can be discreet chemicals, more often however they are mixtures of volatile liquid and/or solid ingredients of natural or synthetic origin. The nature of these ingredients can be found in specialised books of perfumery, e.g. in S. Artander (Perfume and Flavor Chemicals, Montclair N.J., USA 1969). Suitable perfume bases are available commercially from a number of fragrance suppliers.

20

Optionally the shell 13 can be formed from a mixture of a perfume base and materials selected from the group consisting of paraffin, paraffin wax, beeswax, montan wax, carnauba wax, microcrystalline wax, fatty alcohols, fatty acids, fatty esters, natural and synthetic resins, and mixtures thereof. In such instances the  
25 maximum amount of perfume base incorporated in the shell is limited to approximately 50 weight percent, as inclusion levels above this amount make the candle tacky or oily and generally disagreeable to the touch.

30 A fragrance candle according to the present invention preferably comprises a number of additional features. Thus while a plurality of wicks each equidistant from the

candle axis can be employed, it is usual for there to be a single wick 11 which extends along the candle axis.

The candle 10 can have any shape that a conventional pillar candle can have. In  
5 FIGS. 1 and 2 the core 12 and shell 13 are cylindrical.

In FIGS. 3 and 4 the core 22 and shell 23 are square in a cross section taken in a plane normal to the wick 21.

#### 10 Example 1

A core was formed using a commercially available unfragranced cylindrical pillar candle with a single wick extending along the candle axis. The core had a diameter of approximately 50mm, a height of approximately 105mm and a total mass of 172.3g.

15

A shell composition was prepared by heating 150.0g of a perfume base (lavender scent) and 100.0g of LAO C30+ (origin: Aiglon S.A.) in a sealed 500ml glass powder jar to 90°C in a water bath, whereupon the linear alpha olefin dissolved in the perfume base. The mixture was agitated until completely homogeneous and then  
20 cooled to 75°C.

The core was dipped into the molten shell composition, removed and allowed to cool. This dipping and cooling process was repeated until the total mass of the candle had increased to 189.0g. The shell thus had a total mass of about 16.7g, a  
25 thickness of about 1mm and contained approximately 10.0g of the perfume base.

The free standing pillar candle thus produced was not tacky or oily, and provided a suitable amount of fragrance to freshen the surrounding air when unlit.

30 Once lit the fragranced shell, being more distant from the candle flame melted more slowly than the core and formed a rim, which retained the molten pool formed as the

candle burned. The shell surrounding the molten pool was warmed to a temperature above ambient, facilitating additional release of perfume base to the surrounding atmosphere.

## 5 Example 2

4.0g of a perfume base (lavender scent) was mixed with 196.0g of a molten commercially available paraffin wax blend, and 150.0g of the resulting mixture poured into a cylindrical candle mould and allowed to cool to ambient temperature.  
10 A fragranced core, with an axially embedded wick, was thus produced. The core had a diameter of approximately 43mm and a height of approximately 115mm.

A shell composition was prepared by heating 125.0g of a perfume base (lavender scent) and 125.0g of LAO C30+ (origin: Aiglon S.A.) in a sealed 500ml glass  
15 powder jar to 90°C in a water bath, whereupon the linear alpha olefin dissolved in the perfume base. The mixture was agitated until completely homogeneous and then cooled to 75°C.

The core was dipped into the molten shell composition, removed and allowed to  
20 cool. This dipping and cooling process was repeated until the total mass of the candle had increased by 14.0g. The shell had a thickness of about 1mm and contained approximately 7.0g of the perfume base.

The free standing pillar candle thus produced was not tacky or oily, and provided a  
25 suitable amount of fragrance to freshen the surrounding air when unlit.

Once lit the fragranced shell, being more distant from the candle flame melted more slowly than the core and formed a rim, which retained the molten pool formed as the candle burned. The shell surrounding the molten pool was warmed to a temperature  
30 above ambient, facilitating additional release of perfume base to the surrounding

atmosphere. Additional fragrance was released from the molten pool as in a conventional fragrance candle.

5

10

15

20

25

30

35

40

45

50

55

60

65 P36726.3

## CLAIMS

1. A wax air freshener comprising a wax characterised in that the fragrance content of the wax is greater than 15% by weight.

5

2. A free-standing fragranced candle comprising a wax according to claim 1 and a wick.

10 3. A free-standing fragranced candle according to claim 2 characterised in that the candle comprises an outer shell incorporating a perfume base, an inner core and a wick, wherein the fragrance content of the outer shell is greater than 15% by weight.

4. A free-standing fragranced candle according to claims 2 or 3 characterised in that the fragrance content of the outer shell is from 15 to 70% by weight.

15

5. A free-standing fragranced candle according to claim 4 characterised in that the fragrance content of the outer shell is from 40 to 60% by weight.

20 6. A free-standing fragranced candle according to claim 5 characterised in that perfume base incorporated in the shell is 50% by weight.

7. A free standing fragranced candle according to claim 3 characterised in that the outer shell has a higher melting point than the inner core.

25 8. A free-standing fragranced candle according to claim 3 characterised in that the shell comprises a mixture of a perfume base and one or more materials selected from the group consisting of paraffin, paraffin wax, beeswax, montan wax, carnauba wax, microcrystalline wax, fatty alcohols, fatty acids, fatty esters, natural and synthetic resins, and mixtures thereof.

30

9. A free-standing fragranced candle according to claim 8 characterised in that the shell comprises a linear alpha olefin or a mixture of linear alpha olefins.
10. A free-standing fragranced candle according to claim 9 characterised in that the linear alpha olefin is at least a C30 linear alpha olefin.
11. A free-standing fragranced candle according to claim 10 characterised in that the linear alpha olefin is LAO C30+ (available from: Aiglon S.A.).
12. A free-standing fragranced candle according to claim 9 characterised in that the outer shell comprises from 20 to 70 % by weight of a linear alpha olefin or a mixture of linear alpha olefins.
13. A free-standing fragranced candle according to claim 12 characterised in that the outer shell comprises from 40-60 % by weight of a linear alpha olefin or a mixture of linear alpha olefins.
14. A free-standing fragranced candle according to claim 3 characterised in that the outer shell has a thickness of from 0.2 to 4.0mm.
15. A free-standing fragranced candle according to claim 3 characterised in that the shell comprises up to 50% by weight percent of a suitable solvent.
16. A free-standing fragranced candle according to claims 2 or 3 characterised in that the perfume base is a fragranced oil.
17. A free-standing fragranced candle according to claim 3 characterised in that the shell comprises a mixture of (a) between about 30-70 weight percent of a perfume base, (b) between about 20-70 weight percent of a linear alpha olefin and (c) optionally up to 50 weight percent of a suitable solvent

18. A free-standing fragranced candle according to claim 17 characterised in that the shell 13 comprises between about 40-60 weight percent of a linear alpha olefin and between about 40-60 weight percent of a perfume base.
- 5 19. A free-standing fragranced candle according to claim 3 characterised in that the core comprises a material selected from the group consisting essentially of paraffin, paraffin wax, beeswax, montan wax, carnauba wax, microcrystalline wax, fatty alcohols, fatty acids, fatty esters, natural and synthetic resins, and mixtures thereof.
- 10 20. A free-standing fragranced candle according to claim 19 characterised in that the inner core comprises a solid body of wax.
21. A free-standing fragranced candle according to claim 20 characterised in that
- 15 the wax is paraffin wax or beeswax.
22. A free-standing fragranced candle according to claim 3 characterised in that the core contains a perfume base.
- 20 23. A free-standing fragranced candle according to claim 22 characterised in that the inner core contains up to 10% by weight of a perfume base.
24. A free-standing fragranced candle according to claim 3 characterised in that the core has a diameter of approximately 50mm.
- 25 25. A free-standing fragranced candle according to claims 2 or 3 characterised in that the candle comprises a single wick which extends along the candle axis.
26. A free-standing fragranced candle according to claims 2 or 3 characterised in
- 30 that the candle comprises a plurality of wicks each equidistant from the candle axis.



27. A free-standing fragranced candle according to claim 3 characterised in that the core comprises a conventional unfragranced candle with a single wick extending along the candle axis.

5 28. A free-standing fragranced candle according to claim 3 characterised in that the candle has an improved burn performance.

29. A candle lantern comprising a free-standing fragranced candle according to claims 2 or 3.

10

30. A process for the preparation of a free-standing fragranced candle according to claim 3 characterised in that the process comprises a method selected from one or more of moulding, dipping, compressing, extruding and the like.

15 31. A process for the preparation of a free-standing fragranced candle according to claim 3 characterised in that the process comprises coating a conventional candle.

32. A fragranced candle substantially as described with reference to the accompanying examples.

20

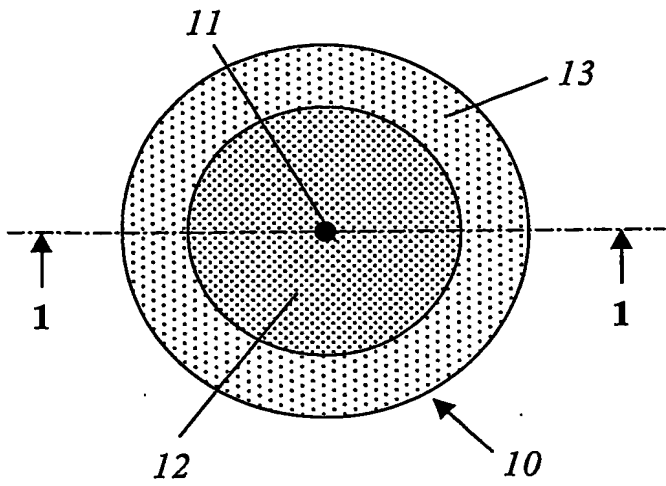
25

30

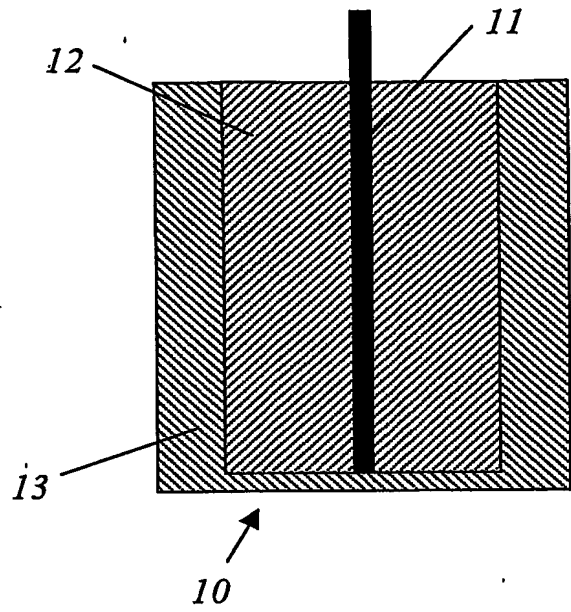
35

40

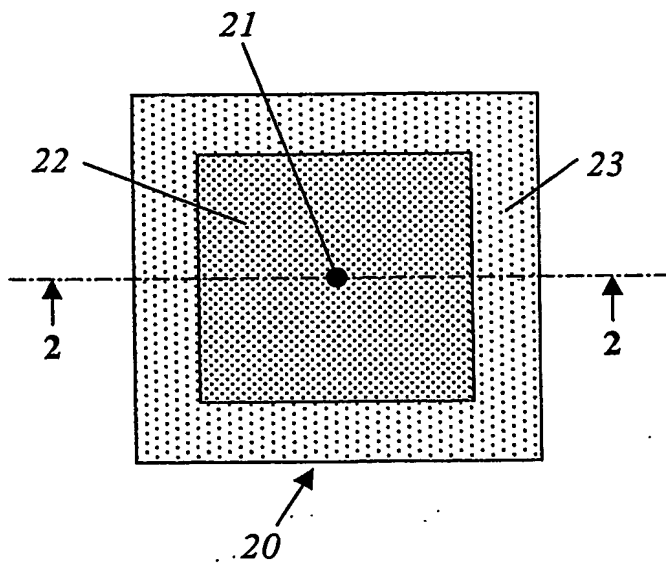
45 P36726.3



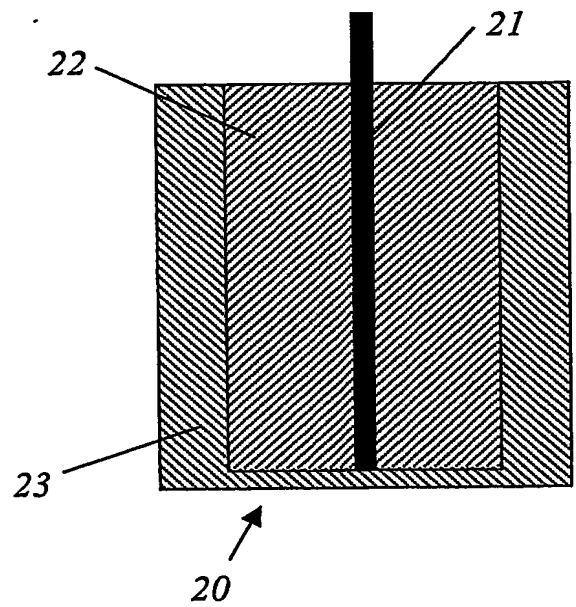
**FIG. 1**



**FIG. 2**



**FIG. 3**



**FIG. 4**

THE PATENT OFFICE  
25 MAR 2003  
Received in Patents  
International Unit

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**